Model # AWLH4030

User's Manual

Ver. 1A

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Package Contents

- 108Mbps SuperG Wireless PCI Adapter
- Quick Installation Guide
- Manual and Drivers/Utility on CD

Note: If any of the above items are missing, please contact your reseller.

System Requirements

- A desktop computer with an available PCI 32-bit slot
- Windows XP, Windows 2000, Windows ME, or Windows 98SE
- At least 32 MB of memory and a 300 MHz processor or higher
- An 802.11b/g Access Point for (**Infrastructure Mode**) or another computer with an 802.11b/g wireless card installed (for **Ad-Hoc Mode**)

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Introduction

The **108Mbps SuperG Wireless PCI Adapter** is an advanced IEEE 802.11b/g compatible, high performance wireless card that supports data transfer speeds of up to 54 Mbps or 108Mbps in **SuperG** mode.

The **108Mbps SuperG Wireless PCI Adapter** comes with software drivers for the most popular Microsoft Windows operating systems and can be integrated into a larger network, running Windows XP, Windows 2000, Windows ME, Windows 98SE, in either **Ad Hoc** mode (without an Access Point) or **Infrastructure mode** (with an Access Point).

Product Features

- Compatible with IEEE 802.11b standard to provide wireless Ethernet data rates of up to11Mbps data rate
- Compatible with IEEE 802.11g high rate standard to provide wireless 54Mbps data rate or 108Mbps data rate (108Mbps requires a SuperG enabled access point/wireless router)
- Operation at dual 2.4 GHz frequency bands to meet worldwide regulations
- Dynamic data rate scaling at 1, 2, 5.5, and 11Mbps for IEEE 802.11b
- Dynamic data rate scaling at 6, 9, 12, 18, 24, 36, 48, 54,108 Mbps for IEEE 802.11g
- Maximum reliability, throughput and connectivity with automatic data rate switching
- Supports wireless data encryption with 64/128/152-bit WEP for security
- Supports infrastructure networks via Access Point and ad-hoc network via peer-to-peer communication
- Built-in dual diversity antenna for reduction of interference in a multi-path environment
- Supports AES enhanced security
- Supports DFS/TPC for European operation
- Supports PCI- Bus (32-bit) 2.2 Type PCI - Card
- User-friendly configuration and diagnostic utilities
- Driver support for Windows 98SE, ME, 2000, and XP

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LEDS

The **108Mbps SuperG Wireless PCI Adapter** has two **LEDs: POWER** and **ACTIVITY**.

Network Mode	LED Activity
Network Activity	Both LEDs flash in unison
Searching for a Network Connection	Both LEDs flash alternately
Associated with the Network, but No Activity	Both LEDs flicker dimly
Power Save Mode (Power-up or Reset)	POWER LED – slow rate blink
Card is disabled	Only the POWER LED flashes

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Installation Considerations

Designed to traverse distances up to 900 feet (~300 meters), the **108Mbps SuperG Wireless PCI Adapter** lets you access your network from your computer virtually anywhere you want. Keep in mind, however, that the number and thickness of walls, ceilings or other objects that the wireless signals must pass through may limit the range. Typical ranges vary depending on the types of materials and background RF noise in your home or business. The key to maximizing the transmission range is to follow these basic principles:

1. Keep the number of walls and ceilings between the Access Point and your receiving device to a minimum - Each wall or ceiling can reduce your Wireless product's range from 3-90 feet (1-30 meters.) For some businesses or for a large residential home deployment, it may be beneficial to have more than one access point with overlapping coverage.

2. Be aware of the direct line between Access Points and computers with wireless cards - A wall that is 1.5 feet thick (.5 meters), at a 45-degree angle appears to be almost 3 feet (1 meter) thick. At a 2-degree angle it looks as if it were over 42 feet (14 meters) thick! Try to make sure that the Access Points and Cards are positioned so that the signal will travel in as straight a line through a wall or ceiling as possible for better reception.

3. Building Materials make a difference - A solid metal door or aluminum studs can have a negative effect on range. Try to position Access Points and computers with wireless cards so that the signal passes through drywall or open doorways and not other materials.

4. Make sure that the antenna is positioned for best reception by using the software signal strength tools included with your **108Mbps SuperG Wireless PCI Adapter**.

5. Keep your product away (at least 3-6 feet or 1-2 meters) from electrical devices or appliances that generate RF noise.

For the average residence, range should not be a problem. If you experience low or no signal strength in areas of your home that you wish to access, consider positioning the Access Point in a location directly between the computers with wireless cards that will be connected. Additional Access Points can be connected to provide better coverage in rooms where the signal does not appear as strongly as desired.

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Installing the PCI Card and Utility

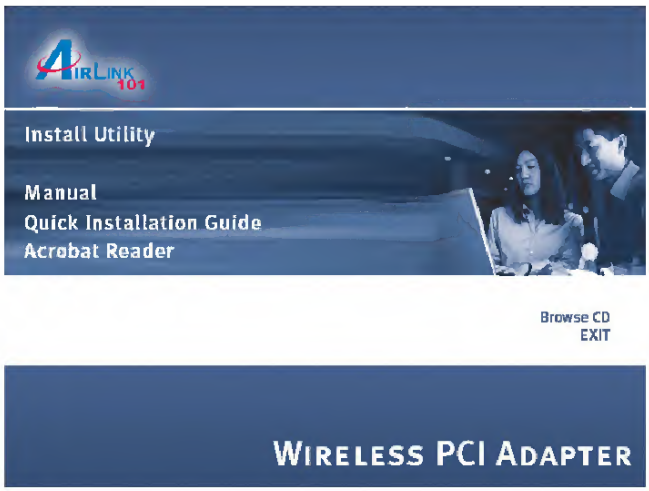
Note: Be sure to power off your computer before inserting the PCI adapter.

Step 1 Insert the PCI adapter into an available PCI slot and turn on your computer.

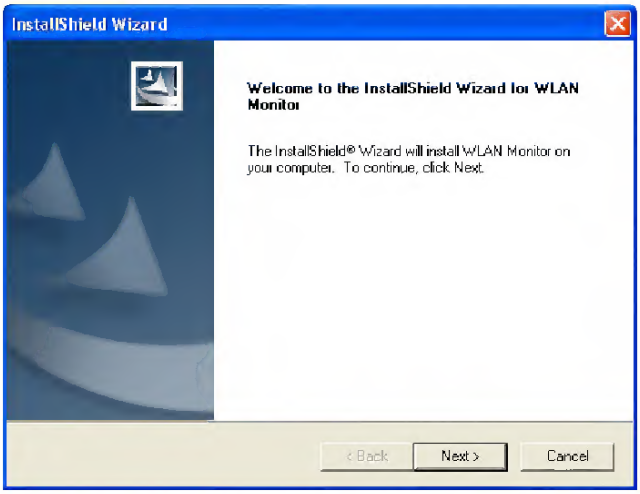
Step 2 Windows will detect the adapter and request for a driver. Click **Cancel** to quit the wizard. Insert the Driver & Utility CD into your CD drive and wait for the autorun page to appear on screen.

Step 3 Click on **Install Utility** at the autorun page.

Note: If the autorun page doesn't appear automatically go to **Start**, **Run**, and type **D:\autorun.exe** (where **D** is the letter of your CD drive) and click **OK**.



Step 4 Click **Next** at the welcome screen.


InstallShield Wizard
Welcome to the InstallShield Wizard for WLAN Monitor
The InstallShield® Wizard will install WLAN Monitor on your computer. To continue, click Next.
< Back
Next >
Cancel

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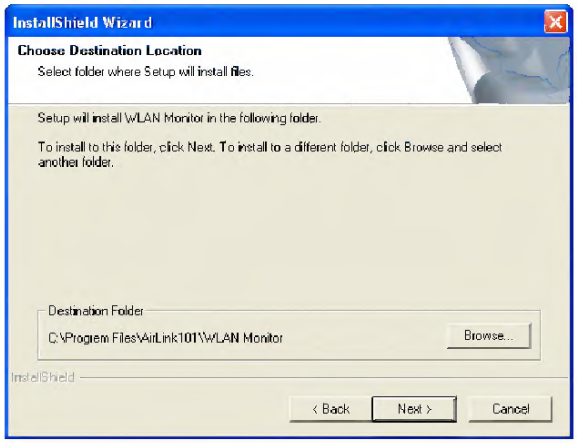
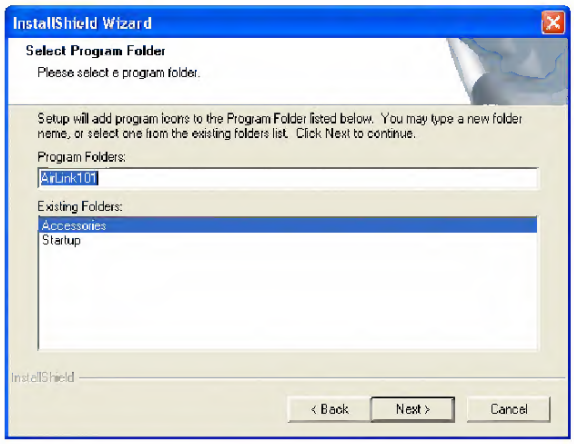
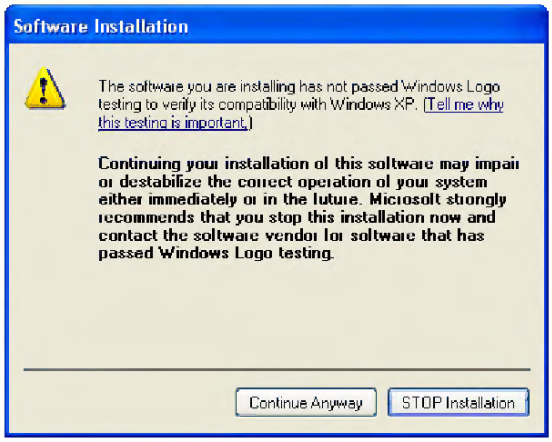
Step 5 Click **Next** to accept the default destination folder to install the software or click **Browse** to manually select a different destination folder.


InstallShield Wizard
Choose Destination Location
Select folder where Setup will install files.
Setup will install WLAN Monitor in the following folder.
To install to this folder, click Next. To install to a different folder, click Browse and select another folder.
Destination Folder
C:\Program Files\AirLink101\WLAN Monitor
Browse...
InstallShield
< Back
Next >
Cancel

Step 6 Click **Next** at the Select Program Folder screen.


InstallShield Wizard
Select Program Folder
Please select a program folder.
Setup will add program icons to the Program Folder listed below. You may type a new folder name, or select one from the existing folders list. Click Next to continue.
Program Folders:
AirLink101
Existing Folders:
Accessories
Startup
InstallShield
< Back
Next >
Cancel

Step 7 Click **Continue Anyway** at the Windows Logo Screen.


Software Installation
The software you are installing has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the software vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

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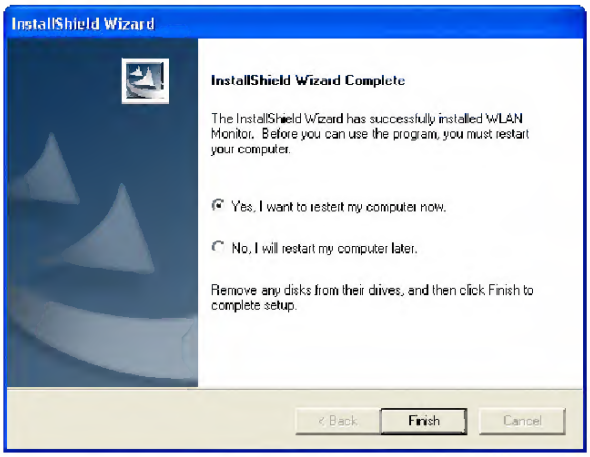
Step 8 Verify **"Yes, I want to restart my computer now"** is selected and click **Finish** to restart your computer.


InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed WLAN Monitor. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
< Back
Finish
Cancel

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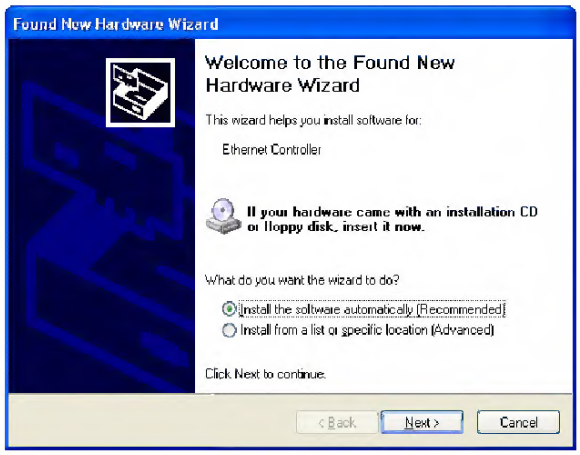
Install Driver

Note: After restarting the computer, Windows will launch the **Found New Hardware Wizard**. The Found New Hardware Wizard will look different depending on your operating system. Follow the on-screen instructions to complete the installation.

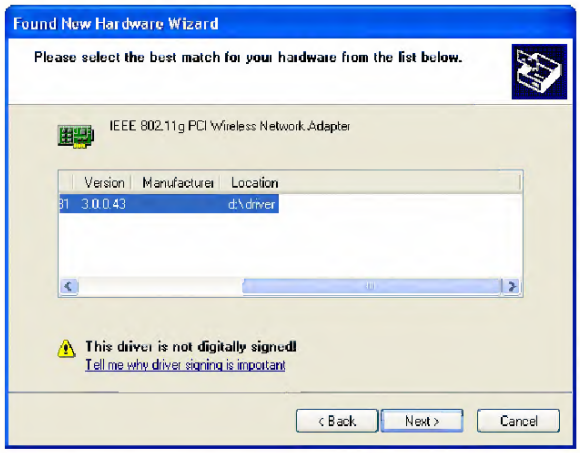
For Windows 98SE and ME users, you may be prompted to insert the Windows 98SE or ME CD during the driver installation. Be sure to have your Windows 98SE or ME CD ready.

Step 1 Select **Install the software automatically** and click **Next**.


Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
Ethernet Controller
If you hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

For Windows 98SE and ME, select **"Search for the best driver for your device"** and click **Next**. Verify all the check boxes are unchecked except for **"Specify a location"** and click **Browse**.

Step 2 Select the driver from the **"Driver"** folder and click **Next**.



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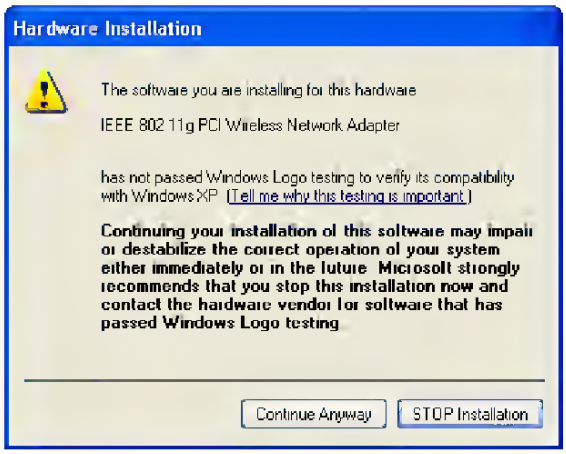
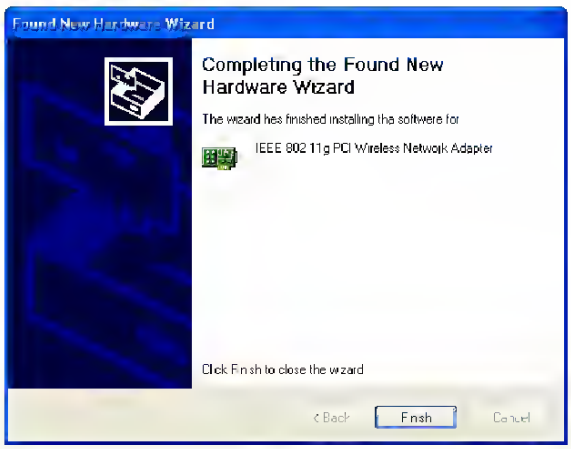
For Windows 98SE and ME, browse to **D:\Driver** folder (where **D** is the letter of your CD drive) and click **OK** then **Next**. Insert the Windows 98SE or ME CD if you are prompted to do so.

Step 3 Click **Continue Anyway** at the Windows Logo Screen.


Hardware Installation
The software you are installing for this hardware
IEEE 802.11g PCI Wireless Network Adapter
has not passed Windows Logo testing to verify its compatibility with Windows XP (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

Step 4 Click **Finish**. Restart the computer if you are prompted to do so.


Found New Hardware Wizard
Completing the Found New Hardware Wizard
The wizard has finished installing the software for:
IEEE 802.11g PCI Wireless Network Adapter
Click Finish to close the wizard.
< Back
Finish
Cancel

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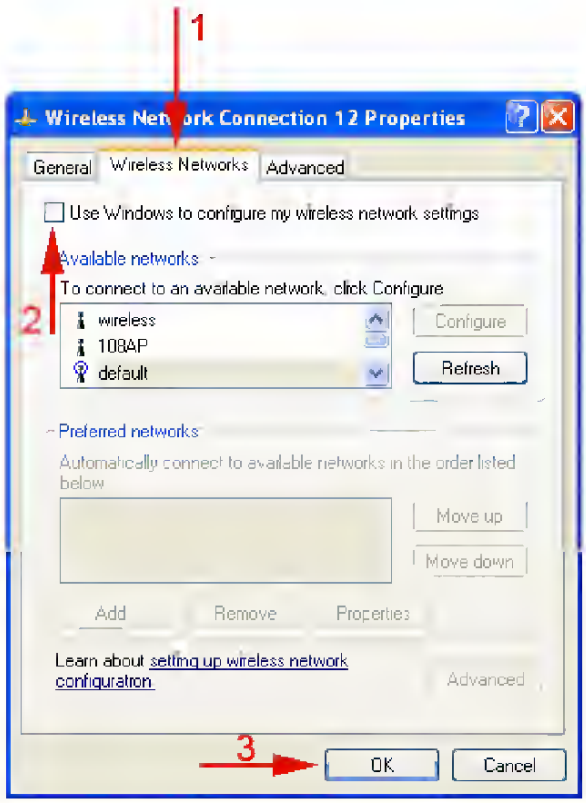
Using the WLAN Monitor

Note to Windows XP Users:

You must disable the Wireless Zero Configuration Utility in order to use the WLAN Monitor. Please refer to the following steps to disable the Wireless Zero Configuration Utility.

Step 1 Double-click on the **Wireless Network Connection Icon** in the system tray, then click on **Properties** or **Advanced**.

Step 2 Go to the **Wireless Networks** tab, uncheck the **"Use Windows to configure my wireless network settings"** check box and click **OK**.



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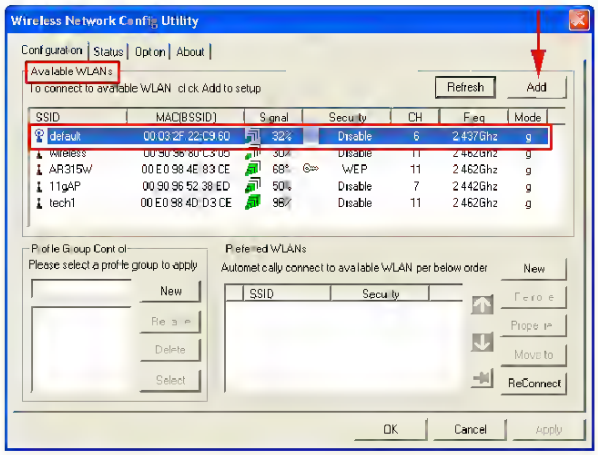
To open the PCI Adapter's utility, double-click on the WLAN Monitor Icon in the system tray.

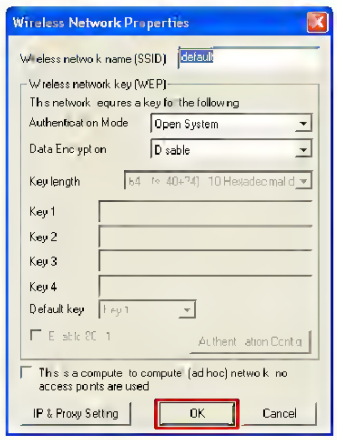
The utility automatically adds an available wireless network to the **Preferred WLANs** box. If no SSID is added, or if the SSID is wrong, please refer to the following steps to join the appropriate wireless network.

Note: Be sure to remove the wrong SSID from the **Preferred WLANs** box before adding any new SSID. You can remove the wrong SSID by selecting it and clicking on **Remove**.

Step 1 Select the SSID of the wireless network you wish to connect to from the **Available WLANs** box and click **Add**.



Step 2 Verify all the settings are correct and click **OK**.



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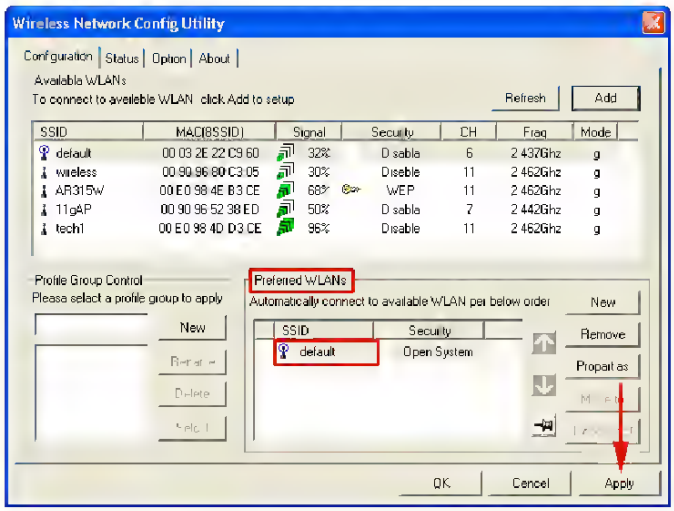
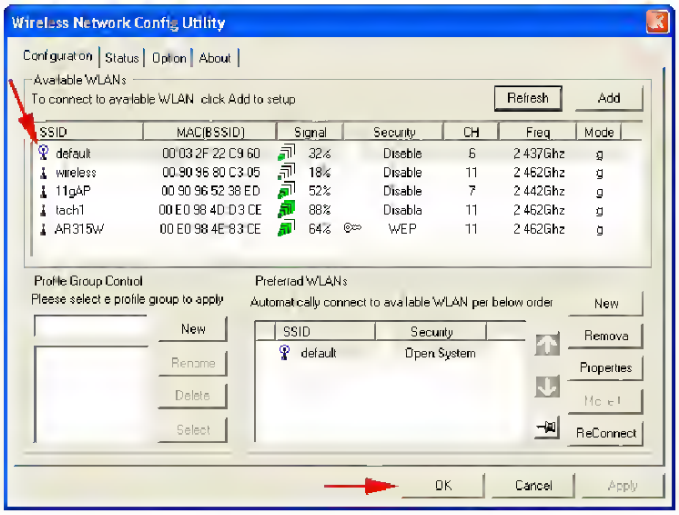
Step 3 Verify the SSID you have selected is in the **Preferred WLANs** box and click **Apply**.



Step 4 A blue circle will surround the SSID you have chosen. Click **OK**.



Step 5 Restart your computer to complete the wireless network connection.

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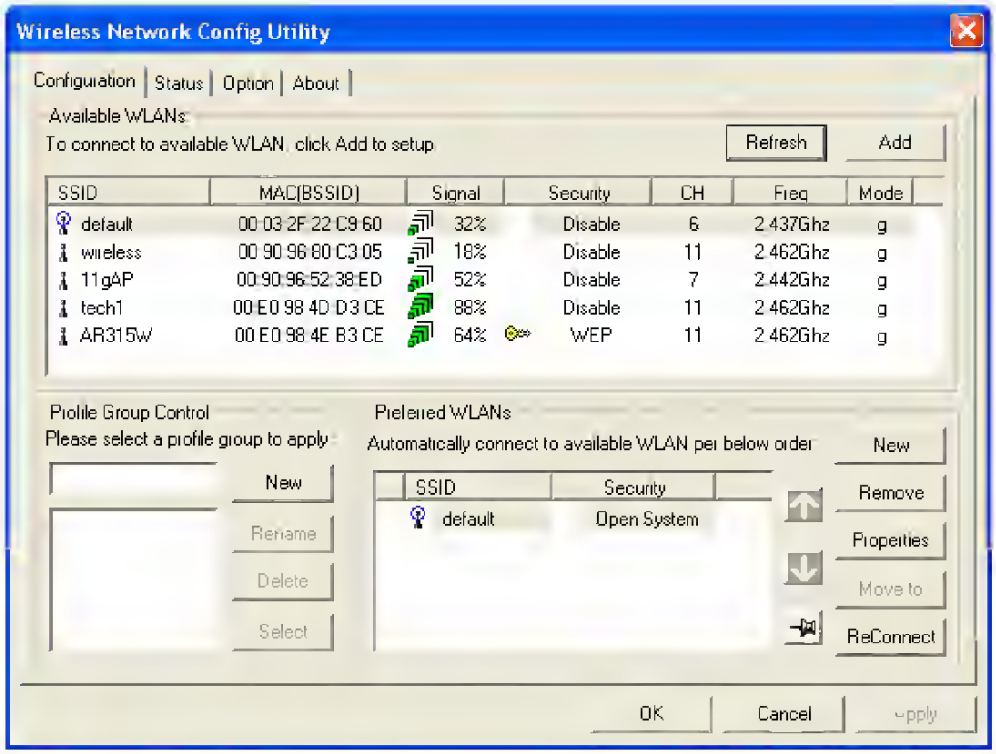
Configuration Tab

The Configuration tab displays a list of available Access Points.



Available WLANs: displays a list of available Access Points that you can connect to. To update the list, click on **Refresh**. To manually add a SSID to the list, click on **Add**.

Profile Group Control: once you have added all the SSID you want to the preferred WLANs, you can group them by giving them a name in the **Profile Group Control** box and click **Add**. Any settings you set to the group will automatically be applied to all WLANS belonging to that group.

Preferred WLANs: you may add a preferred SSID which the wireless adapter will automatically connect to upon startup. To add a new SSID from the available WLANs list, select the desired SSID and click **Add**. To add a new SSID that is not listed in the available WLANs list, click on **New** and manually enter the name of the SSID. If you have more than one preferred WLAN, you may move the SSID up or down the list. Each time the computer starts up, the wireless adapter will attempt to connect to the SSID listed beginning from the top of the list. If you wish to configure the properties of a WLAN, highlight it and click on **Properties**.

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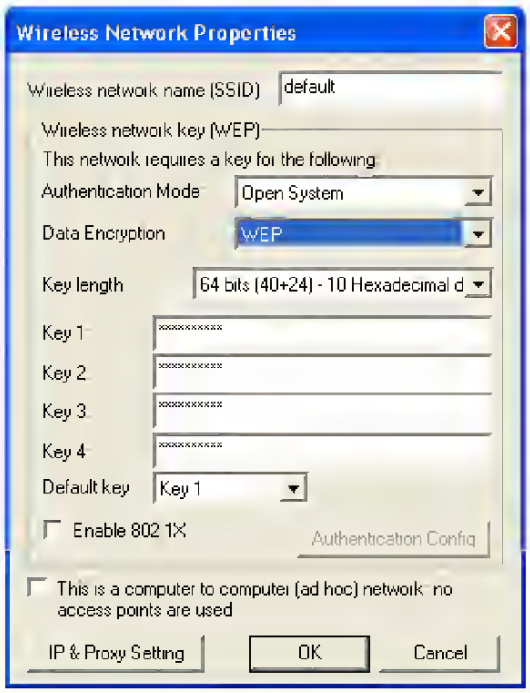
Configuring WEP Encryption

The following screen will appear after you click on the **Properties** button from the Preferred WLANs box.



If your existing wireless network has WEP encryption enabled, you need to configure the wireless adapter with the identical encryption settings in order to establish a connection.

Step 1 Verify that the Wireless network name matches the **SSID** of the Access Point you're trying to connect to.

Step 2 Verify the **Authentication Mode** is set to the same setting as the Access Point you're trying to connect to.

Step 3 Select **WEP** from the **Data Encryption** drop-down menu.

Step 4 Choose the same Key length that the Access Point is using.

Step 5 Enter the identical key in the corresponding key number

Step 6 Make sure the default key is the same key number used by the Access Point.

Note: both the key and the key number must be identical with the Access Point.

Step 7 Click **OK** to save your settings.

Step 8 Click **Apply** and **OK**..

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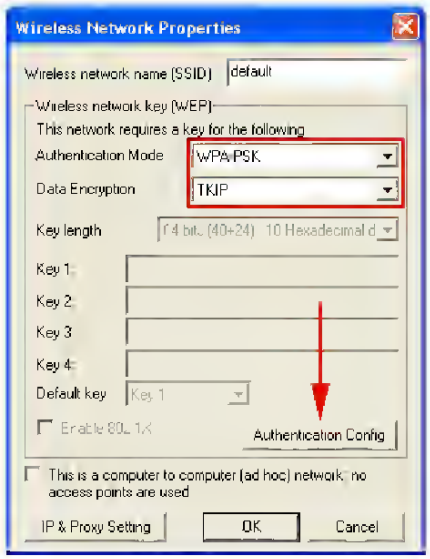
Configuring WPA Encryption

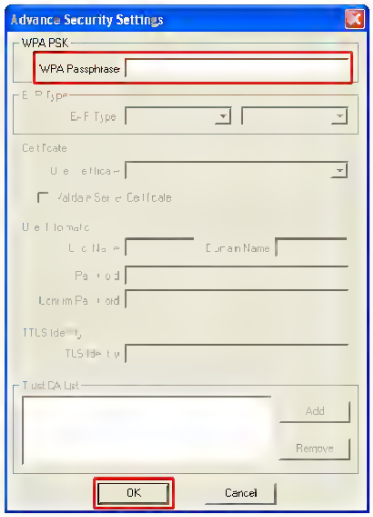
If your existing wireless network has WPA encryption enabled, you need to configure the wireless adapter with the identical encryption settings in order to establish a connection.

Step 1 Go to the **Properties** screen of the preferred WLAN as described above and verify that the Wireless network name is the SSID of the Access Point you're trying to connect to.

Step 2 Choose **WPA-PSK** from the **Authentication Mode**. Select **TKIP** as the **Data Encryption** and click on the **Authentication Config** button.



Step 3 Enter a passphare in the WPA Passphrase field and click **OK**. (Note: the passphrase must be between 8 – 63 characters long).



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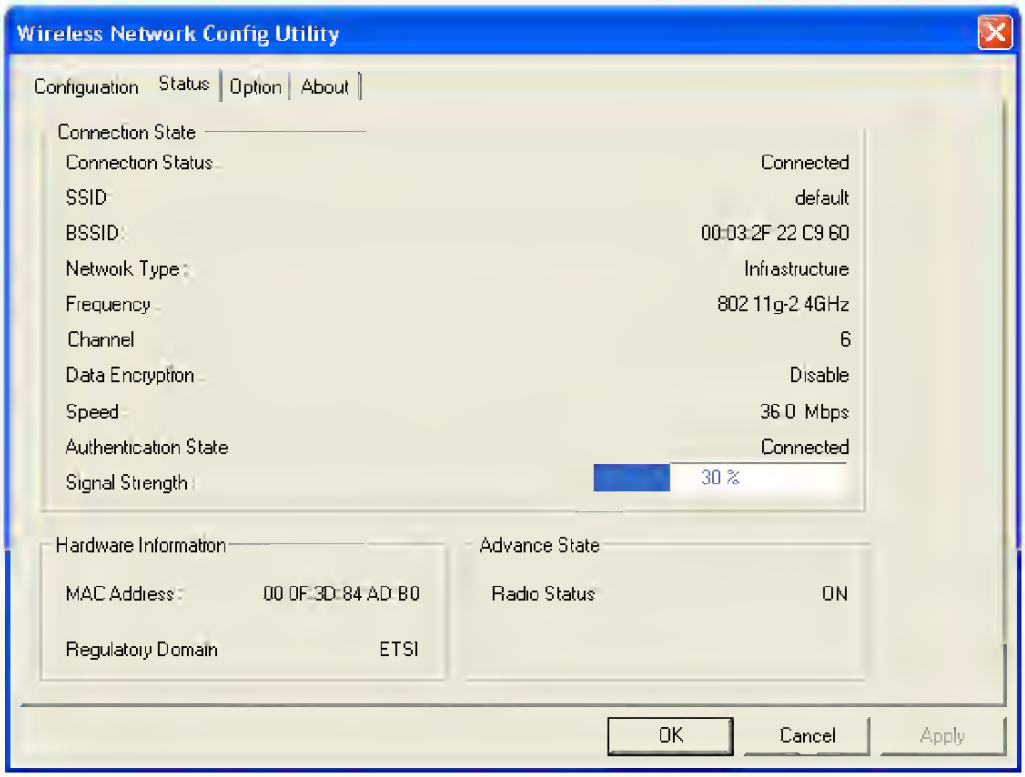
Status Tab

Under the **Status Tab** you will find information on the connection state, hardware information, and advanced state.



Connection Status: displays the status of the connection
SSID: The SSID that the wireless adapter is connected to
BSSID: The MAC Address of the Access Point that the wireless adapter is connected to
Network Type: The network connection type
Frequency: The frequency that the wireless adapter is using
Channel: The channel number that the wireless adapter is using
Data Encryption: Displays if WEP encryption is disabled or enabled
Speed: Displays the speed of the connection
Authentication State: Displays the authentication state
Signal Strength: A bar shows the signal strength of the connection

Hardware Information: Displays the MAC Address of the wireless adapter and the regulatory domain.

Advanced State: Displays whether the radio signal is On or Off.

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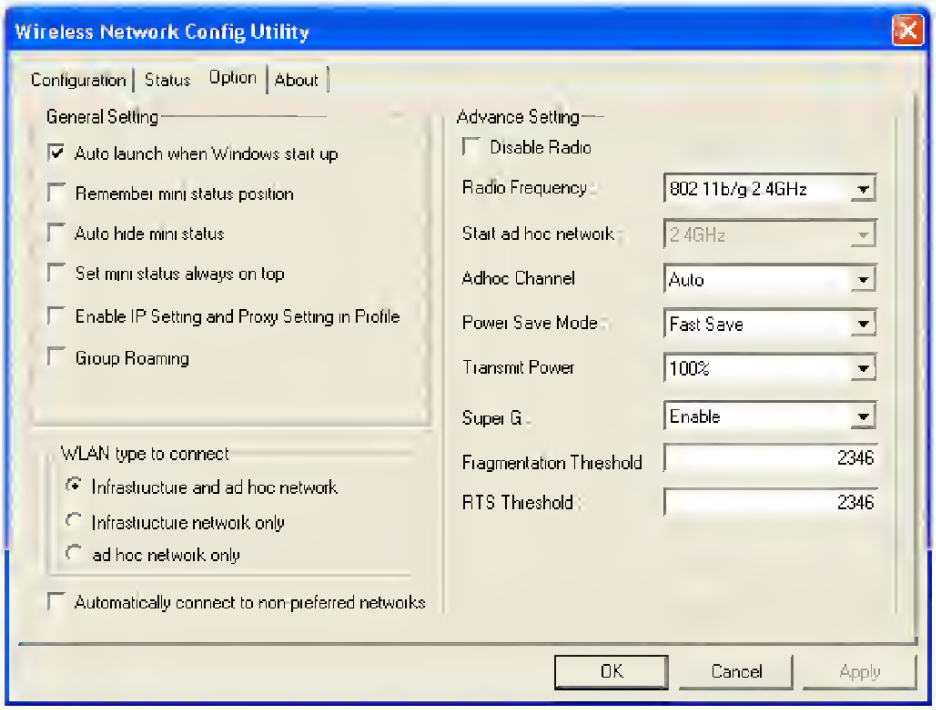
Option Tab

Under the **Option Tab**, general settings and advanced settings are shown.



General Setting:

Auto launch when Windows starts up: check the box to launch the WLAN Monitor when Windows starts up
Remember mini status position: remembers the mini status position
Auto hide mini status: auto hides the mini status screen
Set mini status always on top: the mini status screen will always stay on top of the desktop
Enable IP setting and Proxy setting in profile: allows you to back up previous IP settings
Group Roaming: Check the box to enable group roaming.

WLAN type to connect:

Infrastructure and Ad-Hoc network: for connecting to either an access point or a peer network client without the use of an access point
Infrastructure: for connecting to an access point only
Ad-Hoc: for connecting directly to another wireless client without using an Access Point or wireless router. (Both wireless clients must be set to using Ad-Hoc mode).

Automatically connect to non-preferred networks: Check the box to connect to non-preferred networks upon startup.

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Advance Setting:

Disable Radio: Check the box to disable the radio signal
Radio Frequency: 802.11b/g switches automatically between 802.11b and 802.11g speed depending on the other wireless devices. 802.11b will only connect at 802.11b speed (11 Mbps or lower).
Start ad hoc network: Choose the appropriate frequency for your ad-hoc network
Ad-Hoc Channel: Choose the desired channel for your ad-hoc network. All devices in the ad-hoc network must use the same channel.
Power save Mode:
Fast Save - This setting consumes half the power.
Max Save - This setting consumes the least power.
Disable - This default setting consumes the most power.
Transmit Power: Choose to transmit power from 100%, 50%, 25%, 12.5% and Lowest.
Super G: Enable or Disable the Super G function (108Mbps). In order to transfer speeds at 108 Mbps, all wireless devices must be Super G compatible and set to use Super G.
Fragmentation Threshold: Set the desired fragmentation threshold
RTS Threshold: Set the desired RTS threshold

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About Tab

Displays the Driver and Utility version

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Troubleshooting

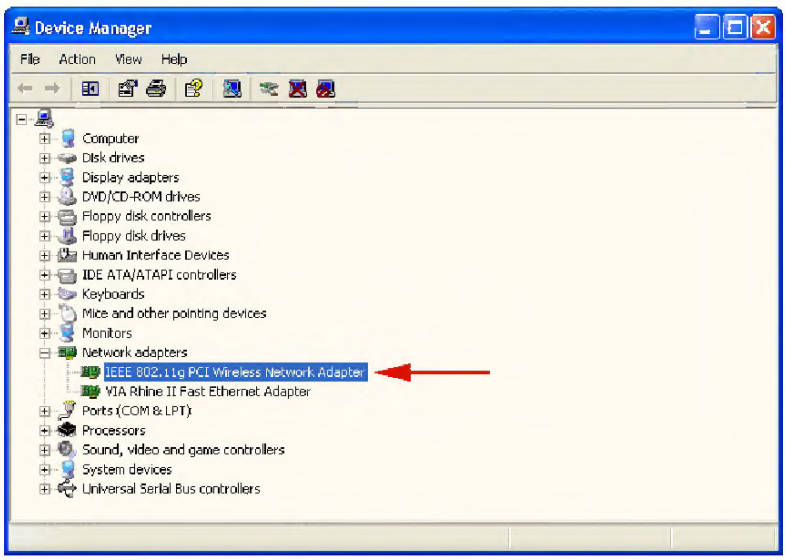
1. How do I verify if the driver is installed correctly?

To verify if the driver for the wireless adapter is installed correctly, follow the steps below.

Step 1 Right-click on **My Computer** from your desktop and choose **Properties**.

Step 2 Select the **Device Manager** tab. (For Windows 2000/XP, select the **Hardware tab** first then click on **Device Manager**).

Step 3 Expand **Network adapters** and verify that **IEEE 802.11g PCI Wireless Network Adapter** is in the list and that no yellow question mark or exclamation mark is beside it.



Step 4 Close the Device Manager. If you do not see IEEE 802.11g PCI Wireless Network Adapter in the list, try to reinstall the driver again.

2. The computer does not recognize the PCI adapter.

Make sure that the PCI adapter is properly seated in the computer's PCI bus slot. If there are additional free PCI slots, try to install the PCI adapter in those slots.

3. The PCI adapter does not work properly after the driver is installed.

- **Restart** the computer. In some cases, it will be necessary to restart the computer after installing the driver.
- If the device is not working properly and a yellow exclamation mark is displayed, then there is probably a resource conflict. In this case, make sure the computer system has a free IRQ and if necessary, uninstall the driver, restart the system, and repeat the driver installation procedure.

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Technical Specifications

Standards
IEEE 802.11b
IEEE 802.11g
IEEE 802.11

Buy Type
PCI 2.2

Supported OS
Windows XP
Windows 2000
Windows ME
Windows 98SE

Frequency Range
2.4GHz ~2.497GHz

Data Rates
1, 2, 5.5, 11 Mbps (IEEE 802.11b)
6, 9, 12, 18, 24, 36, 48, 54 (IEEE 802.11g), 108 Mbps (must have Super G enabled access point/wireless router).

Modulation Techniques

IEEE 802.11g
BPSK
QPSK
16 QAM
64 QAM
OFDM

IEEE 802.11b
DQPSK
DBPSK
DSSS
CCK

Data Security
64, 128, 154-bit WEP (Wired Equivalent Privacy) Encryption

Media Access Control
CSMA/CA with ACK

Diagnostic LED
Power, Link

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Receiver Sensitivity:

54Mbps OFDM, 10% PER,-68dBm
48Mbps OFDM, 10% PER,-68dBm
36Mbps OFDM, 10% PER,-75dBm
24Mbps OFDM, 10% PER,-79dBm
18Mbps OFDM, 10% PER,-82dBm
12Mbps OFDM, 10% PER,-84dBm
11Mbps CCK, 8% PER, -82dBm
9Mbps OFDM, 10% PER,-87dBm
6Mbps OFDM, 10% PER,-88dBm
5.5Mbps CCK, 8% PER,-85dBm
2Mbps QPSK, 8% PER,-86dBm
1Mbps BPSK, 8% PER,-89dBm

Weight:
0.12 lb. (55 grams)

Physical Dimensions:
L = 4.64 inches (130.3mm)
W = 2.13 inches (64mm)
H = 0.34 inches (8.1mm)

Temperature
Operating: 0ºC to 55ºC (32ºF to 149ºF)

Humidity
95% maximum, non-condensing

Internal Antenna Type
Dipole with detachable reverse SMA connector

Transmitter Output Power

15dBm ± 2dB

Technical Support

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